

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:
Robin Cheung, et al.

Serial No.: 10/686,486

Confirmation No.: 8014

Filed: October 15, 2003

For: Apparatus for Electro
Chemical Deposition of
Copper Metallization with
the Capability of In-Situ
Thermal Annealing

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Group Art Unit: 1742

Examiner: Harry D. Wilkins, III

MAIL STOP APPEAL BRIEF - PATENTS  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

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6/19/2007  
Date

Nan Z. Carr

Dear Sir:

## REPLY BRIEF

Applicants submit this Reply Brief to the Board of Patent Appeals and Interferences in response to the Examiner's Answer dated May 24, 2007. Please charge any additional fees that may be required to make this Appeal Brief timely and acceptable to Deposit Account No. 20-0782/APPM/003421.C2/KMT.

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### **Grounds of Rejection Withdrawn from Appeal**

Applicants withdraw the following grounds of rejection from appeal because the Examiner has withdrawn these rejections.

1. Claims 15 and 20 stand rejected under 35 U.S.C. § 102(e) as being anticipated by *Dordi et al* (U.S. Patent No. 6,258,220, hereafter *Patent'220*), *Dordi et al* (U.S. Patent No. 6,635,157, hereafter *Patent'157*), *Dordi et al* (U.S. Patent Publication No. 2002/0029961, hereafter *Pub'961*), *Dordi et al* (U.S. Patent Publication No. 2004/0084301, hereafter *Pub'301*), and *Dordi et al* (U.S. Patent No. 6,267,853, hereafter *Patent'853*).

### **Grounds of Rejection to be Reviewed on Appeal**

1. Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Yoshioka et al* (U.S. Patent No. 5,297,910, hereafter *Yoshioka*), in view of *Bleck et al* (U.S. Patent No. 5,980,706, hereafter *Bleck*) and *Uzoh et al* (U.S. Patent No. 6,123,825, hereafter *Uzoh*).

2. Claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Yoshioka* in view of *Bleck*, *Shinbara* (U.S. Patent 6,155,275, hereafter *Shinbara*), and *Uzoh*.

## **ARGUMENTS**

1. **Argument regarding claim 15 which stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Yoshioka*, in view of *Bleck* and *Uzoh*.**

**THE EXAMINER ERRED IN REJECTING CLAIM 15 UNDER 35 U.S.C. §103(a) BECAUSE THE COMBINED REFERENCES DO NOT TEACH OR SUGGEST ONE OR MORE THERMAL ANNEAL CHAMBERS IN CONNECTION WITH A MAINFRAME.**

The Examiner indicates, in the Examiner's Answer (hereafter *Answer*), that Applicants argued *Uzoh* does not teach the structure of an annealing chamber and had admitted that thermal process chambers are well known in the specification (See *Answer* at page 6).

Applicants' prior argument was that even though *Uzoh* does teach a process involving an annealing step, *Uzoh* does not teach or suggest *combining* the structure that performs the annealing step with the structure that performs the previous steps. Applicants did not stress that *Uzoh* does not teach a specific anneal chamber.

The Examiner argues that it would have been obvious for one of ordinary skill in the art to incorporate all needed processing stations into a mainframe (See *Answer* at page 7).

Applicants respectfully submit that Examiner has not found references that teach or suggest one or more rapid thermal anneal chambers, or one or more thermal anneal chambers, in connection with a mainframe of an electro-chemical deposition system as set forth in claim 15. Absent some motivation or suggestion of the claimed subject matter, the Examiner uses impermissible hindsight in combining the elements of the three cited references.

**2. Argument regarding claim 20 which stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Yoshioka* in view of *Bleck*, *Shinbara*, and *Uzoh*.**

**THE EXAMINER ERRED IN REJECTING CLAIM 20 UNDER 35 U.S.C. §103(a) BECAUSE THE COMBINED REFERENCES DO NOT TEACH OR SUGGEST ONE OR MORE THERMAL ANNEAL CHAMBERS AND TWO OR MORE SPIN-RINSE-DRY CHAMBERS IN CONNECTION WITH A LOADING STATION.**

Applicants respectfully traverse this rejection.

*Yoshioka*, *Bleck*, and *Uzoh* are described above. The combination of *Yoshioka*, *Bleck*, and *Uzoh* does not teach or suggest one or more thermal anneal chambers and two or more spin-ring-dry chambers in connection with a loading station, as set forth in claim 20.

*Shinbara* teaches a spin-rinse-dry station for cleaning wafers after processing. However, combination of *Shinbara* with *Yoshioka*, *Bleck*, and *Uzoh* does not teach or suggest one or more thermal anneal chambers and two or more spin-ring-dry chambers in connection with a loading station, as set forth in claim 20. Absent some motivation or suggesting of the claimed subject matter, the Examiner uses impermissible hindsight in combining the element of these four references together.

Therefore, *Yoshioka*, *Bleck*, *Shinbara* and *Uzoh*, alone or in combination, do not teach, show or suggest an electro-chemical deposition system, comprising a mainframe having a mainframe wafer transfer robots disposed therein, a loading station disposed in connection with the mainframe, wherein the loading station comprises one or more cassette receiving areas, two or more processing stations disposed in connection with the mainframe, wherein each processing station comprises two or more electrochemical deposition cells, and two or more post deposition treatment chambers in connection with the loading station, wherein the two or more post deposition treatment chambers comprise one or more thermal anneal chambers, and two or more spin-rinse-dry modules, and one or more loading station robots transfer wafers between the one or more cassette receiving areas and the two or more post deposition treatment chambers, as recited in claim 20.

In the Examiner's Answer dated May 24, 2007, the Examiner pointed out the "rapid thermal anneal chambers" was not cited in claim 20, only "thermal anneal chambers" was cited (See *Answer* at page 7).

Applicants respectfully submit that the term "rapid" was presented in the argument with respect of claim 20 due to clerical errors and has been removed from Applicants' argument shown above.

The Examiner further asserted that Applicants has argued that the claim term "in connection with" means "adjacent to", which is not supported by the specification (See *Answer* at page 8).

Applicants respectfully submit that the term "adjacent to" was first introduced by the Examiner, e.g. in page 6 of Final Office Action dated May 26, 2006, in describing *Uzoh*. "Adjacent" was used by Applicants only to address Examiner's view on *Uzoh*, not to interpret "in connection with", see page 11 of Appeal Brief filed January 22, 2007.

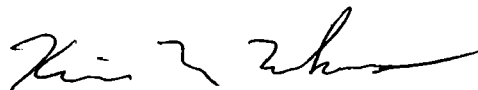
Additionally, even though Applicants did not use the term "adjacent" to describe the claimed subject matter, the term "adjacent" is nevertheless supported by the specification since "adjacent" items may or may not be in actual contact with each other (see attached Evidence from New Webster's New World Dictionary).

Applicants further submit that the usage of claim term "in connection with" is consistent in claims 15 and 20, and supported by the specification since "in connection with" may be construed as "directly or indirectly connected to".

## CONCLUSION

For the reasons presented above, Appellants respectfully submit that the rejections over claims 15 and 20 are improper. Reversal of the rejections is respectfully requested.

Respectfully submitted,



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## **EVIDENCE APPENDIX**

1. Definition of "Adjacent" Excerpt from Webster's New World Dictionary.

1168

THIRD COLLEGE EDITION

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# Webster's New World Dictionary

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OF AMERICAN ENGLISH

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**VICTORIA NEUFELDT**

Editor in Chief

**DAVID B. GURALNIK**

Editor in Chief Emeritus



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**Webster's New World**  
**New York**

*Dedicated  
to David B. Guralnik  
lexicographical mentor  
and friend*

Webster's New World Dictionary, Third College Edition

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Database design and creation by Lexi-Comp, Inc., Hudson, Ohio.

The typefaces used are Century Schoolbook and Helvetica.

Manufactured in the United States of America

3 4 5 6 7 8 9

**Library of Congress Cataloging-in-Publication Data**

Webster's New World dictionary of American English / Victoria  
E. Neufeldt, editor-in-chief. — 3rd college ed.

1. English language—Dictionaries. 2. Americanisms—  
Dictionaries.

I. Neufeldt, Victoria E.  
PE1628.W5633 1988

88-1712

ISBN 0-13-947169-3 (thumb-indexed)  
0-13-949280-1 (plain-edged)  
0-13-949314-X (leatherkraft)

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